

## CLAIMS

## WHAT IS CLAIMED IS:

1           1.     An apparatus for estimating printer resources, said  
2 apparatus comprising:

3                 a comparator configured and adapted to receive first and second  
4 values, said comparator further being adapted to compare said first value to  
5 said second value and to generate an output signal based on said comparison,  
6 wherein said first value represents a quantity of a printer resource needed to  
7 print a document and further wherein said second value represents an amount  
8 of said printer resource available at a printer; and,

9                 a controller coupled to said comparator, said controller being  
10 configured and adapted to control said comparator and to generate a control  
11 signal based on said comparison.

1           2.     The apparatus of claim 1 further comprising:

2                 a converter coupled to said comparator and being coupled to and  
3 controlled by said controller, said converter being configured to receive said  
4 first and said second values, and said converter further being configured to  
5 convert said first and said second values into a common unit of measure.

1           3.     The apparatus of claim 1 wherein said control signal  
2 generated by said controller causes an indication signal to be generated and  
3 wherein said indication signal indicates that insufficient resources are available  
4 to print said document.

1           4.     The apparatus of claim 3 further comprising an indication  
2 signal generator, said indication signal generator being configured to receive  
3 said control signal from said controller and further being configured to generate

4 said indication signal in response to said control signal.

1 5. The apparatus of claim 1 wherein said control signal  
2 generated by said controller causes said document to be printed.

1 6. The apparatus of claim 5 wherein said control signal  
2 generated by said controller is supplied by said controller to a print driver that  
3 responds to said control signal by sending a print command to said printer.

1 7. The apparatus of claim 1 wherein said control signal  
2 comprises a first control signal, and wherein said controller is further  
3 configured and adapted to generate a second control signal for causing a printer  
4 to switch between a first mode of operation and a second mode of operation,  
5 said printer responding to a printer server while operating in said first mode  
6 and said printer responding to said printer driver while operating in said second  
7 mode.

1 8. The apparatus of claim 1 wherein said apparatus is  
2 disposed in a computer.

1 9. The apparatus of claim 1 wherein said apparatus is  
2 coupled to a computer.

1 10. The apparatus of claim 1 wherein said printer resource  
2 comprises paper.

1 11. The apparatus of claim 1 wherein said printer resource  
2 comprises toner.

1                   12.    The apparatus of claim 1 wherein said printer resource  
2 comprises ink.

1                   13.    A computer system comprising:  
2                   a processor;  
3                   an apparatus communicatably coupled to said processor, said  
4 computer system being configured to receive first and second values and  
5 compare said first value to said second value and being further configured to  
6 generate a control signal based on said comparison, said first value being  
7 associated with an amount of a first printer resource that is required to print a  
8 document and said second value being associated with an amount of said first  
9 printer resource that is available at a printer; and,  
10                  a print driver communicatably coupled to said processor and to  
11 said apparatus, said print driver being capable of receiving and responding to  
12 said control signal.

1                   14.    The computer system of claim 13 wherein said print driver  
2 is communicatably coupled to said printer and wherein said print driver  
3 responds to said control signal by causing said printer to print said document.

1                   15.    The computer system of claim 14 wherein said print driver  
2 comprises a missile extension and wherein said missile extension  
3 communicates with a ping firmware disposed in said printer.

1                   16.    The computer system of claim 13 wherein said print driver  
2 responds to said control signal by causing an indication signal to be generated  
3 and wherein said indication signal indicates that an insufficient amount of said  
4 first printer resource is available for printing said document.

1           17. The computer system of claim 16 further comprising a  
2 monitor, wherein said indication signal generated by said print driver  
3 comprises a text message to be displayed on said monitor.

1           18. The computer system of claim 17 wherein said print driver  
2 is communicably coupled to said printer and wherein said apparatus is further  
3 adapted to cause said print driver to generate a command that causes said  
4 printer to switch from a first mode of operation to a second mode of operation  
5 and further wherein said apparatus causes said print driver to generate said  
6 command in response to a print job assurance request.

1           19. The computer system of claim 18 wherein said first mode  
2 of operation causes said printer to respond to commands issued by a print  
3 server.

1           20. The computer system of claim 18 wherein said second  
2 mode of operation causes said printer to stop responding to commands issued  
3 by a print server and to begin responding to commands issued by said print  
4 driver.

1           21. The computer system of claim 13 wherein said print driver  
2 is communicably coupled to said printer, said apparatus further being  
3 configured to cause said print driver to request that said printer transmit said  
4 second value.

1           22. The computer system of claim 13 wherein said print driver  
2 is communicably coupled to said printer and wherein said second value is  
3 supplied to said apparatus by said print driver.

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1           23.    A computer network, said network comprising:  
2           a communication network;  
3           a plurality of computers coupled to said communication network;  
4           a controller coupled to said communication network, said  
5 controller being capable of receiving a plurality of print jobs from said  
6 computers;  
7           a printer coupled to said communication network, said printer  
8 being configured to operate in a first mode wherein said printer is responsive to  
9 said controller and in a second mode wherein said printer is responsive to one  
10 of said plurality of computers and wherein said printer switches between said  
11 first mode and said second mode in response to a printer control signal; and,  
12           a print job assurance apparatus coupled to said communication  
13 network and further coupled to one of said computers, said print job assurance  
14 apparatus being configured to cause said one of said computers to generate said  
15 printer control signal, said print job assurance apparatus further being  
16 configured to determine whether said printer has sufficient printer resources to  
17 print a document.

1           24.    The communication system of claim 23 wherein said print  
2 job assurance apparatus is further configured to provide an indication signal to  
3 said one of said computers, said indication signal indicating whether said  
4 printer has sufficient print resources to print said document.

1           25.    The communication system of claim 23 wherein said one  
2 of said computers comprises a print driver.

1           26.    The communication system of claim 23 wherein said  
2 communication network comprises a wireless network and further wherein said

3 computer, said controller, said printer and said print job assurance apparatus  
4 are wirelessly coupled to said communication network.

1 27. The communication system of claim 23 wherein said  
2 controller comprises a print server.

1 28. A computer program product comprising a computer  
2 usable medium having computer readable program code embodied in said  
3 medium that when executed causes a computer to:

4 compare a first value to a second value, said first value being an  
5 amount of a printer resource required to print a document, and said second  
6 value being an amount of said printer resource available at a printer; and,  
7 generate a control signal based on said comparison.

1 29. The computer program product of claim 28, further  
2 comprising computer readable program code embodied in said medium that  
3 when executed causes a computer to:

4 convert said first and said second value to a common unit of  
5 measure before said first and second values are compared.

1 30. The computer program product of claim 28 further  
2 comprising computer readable program code embodied in said medium that  
3 when executed causes said computer to:

4 supply said control signal to a print driver, said control signal  
5 causing said print driver to generate a message indicating whether said printer  
6 resource available at said printer is sufficient to print said document.

1 31. The computer program product of claim 28 further  
2 comprising computer readable program code embodied in said medium that

3 when executed causes said computer to:  
4 generate a request and supply said request to a print driver,  
5 wherein said request causes said print driver to obtain said first value from a  
6 processor and to obtain said second value from said printer.

1 32. The computer program product of claim 28 further  
2 comprising computer readable program code embodied in said medium that  
3 when executed causes said computer to:  
4 supply said control signal to a print driver, said control signal  
5 causing said printer driver to cause said printer to print said document.

1 33. The computer program product of claim 28 further  
2 comprising computer readable program code embodied in said medium that  
3 when executed causes said computer to:  
4 cause said printer to switch from a first mode of operation to a  
5 second mode of operation when a print job assurance feature is selected,  
6 wherein said printer responds to a first computer while operating in said first  
7 mode of operation and wherein said printer responds to a second computer  
8 while operating in said second mode of operation.

1 34. The computer program product of claim 33 wherein said  
2 first computer comprises a print server.

1 35. The computer program product of claim 33 further  
2 comprising computer readable program code embodied in said medium that  
3 when executed causes said computer to:  
4 cause said printer to switch from said second mode of operation  
5 to said first mode of operation after said document has been printed by said  
6 printer.

1                   36. A method for estimating printer resources, said method  
2 comprising:  
3                   comparing a first value to a second value, said first value being  
4 an amount of a printer resource required to print a document and said second  
5 value being an amount of said printer resource available at said printer;  
6                   causing said document to be printed if said second value is  
7 greater than said first value; and,  
8                   generating an indication signal if said first value is greater than  
9 said second value, said indication signal alerting a user that said amount of said  
10 printer resource available at said printer is insufficient to print said document.

1                   37. The method of claim 36 further comprising the step of:  
2                   converting said first and second values to a common unit  
3 of measure before said step of comparing.

1                   38. The method of claim 36 further comprising the steps of:  
2                   requesting said first value from a first processor; and,  
3                   requesting said second value from said printer.

1                   39. The method of claim 36 further comprising the steps of:  
2                   causing said printer to switch from a first mode of operation to a  
3 second mode of operation in response to a print job assurance request, wherein  
4 said printer responds to a print server when operating in said first mode and  
5 wherein said printer responds to said first processor when operating in said  
6 second mode; and,  
7                   causing said printer to switch from said second mode to said first  
8 mode after said document has been printed.